

# HY-8 Culvert Analysis Report

## Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 0 cfs

Design Flow: 4.38 cfs

Maximum Flow: 4.92 cfs

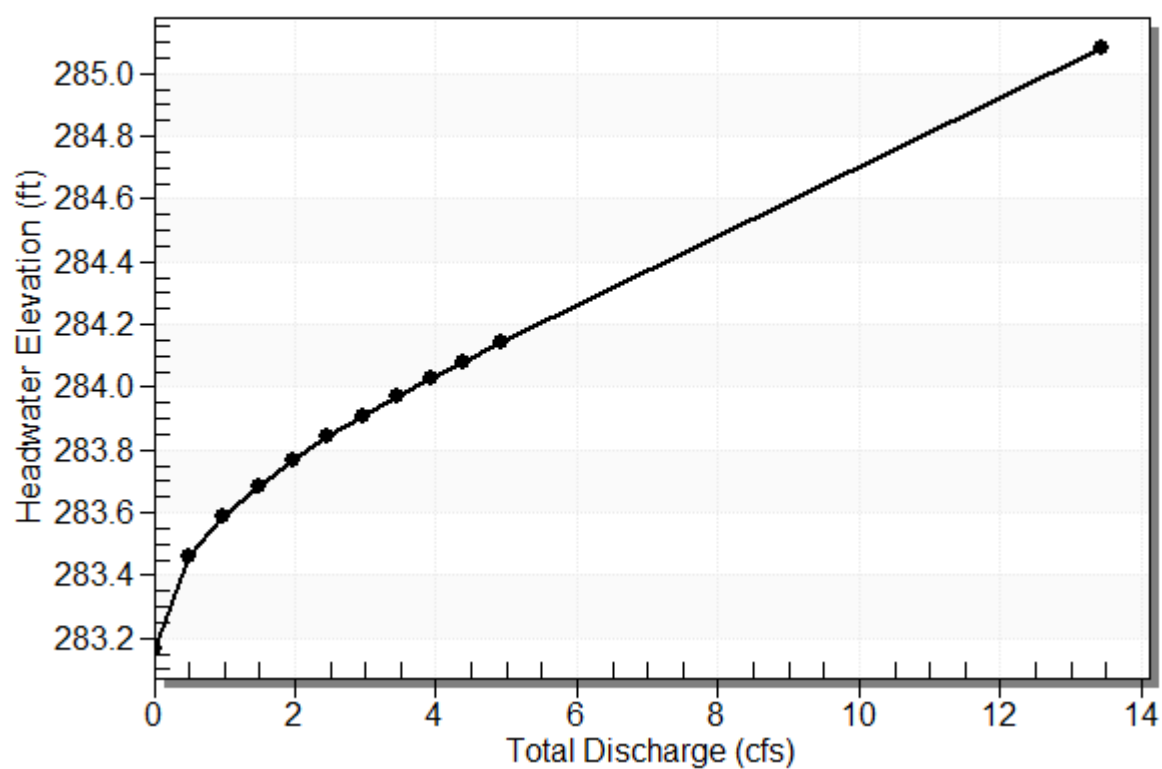
**Table 1 - Summary of Culvert Flows at Crossing: Crossing 18**

Headwater Elevation (ft)	Total Discharge (cfs)	Lt. Sta. 250+15 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
283.17	0.00	0.00	0.00	1
283.46	0.49	0.49	0.00	1
283.59	0.98	0.98	0.00	1
283.68	1.48	1.48	0.00	1
283.77	1.97	1.97	0.00	1
283.84	2.46	2.46	0.00	1
283.91	2.95	2.95	0.00	1
283.97	3.44	3.44	0.00	1
284.03	3.94	3.94	0.00	1
284.08	4.38	4.38	0.00	1
284.14	4.92	4.92	0.00	1
285.00	13.43	13.43	0.00	Overtopping

# Rating Curve Plot for Crossing: Crossing 18

## Total Rating Curve

Crossing: Crossing 18



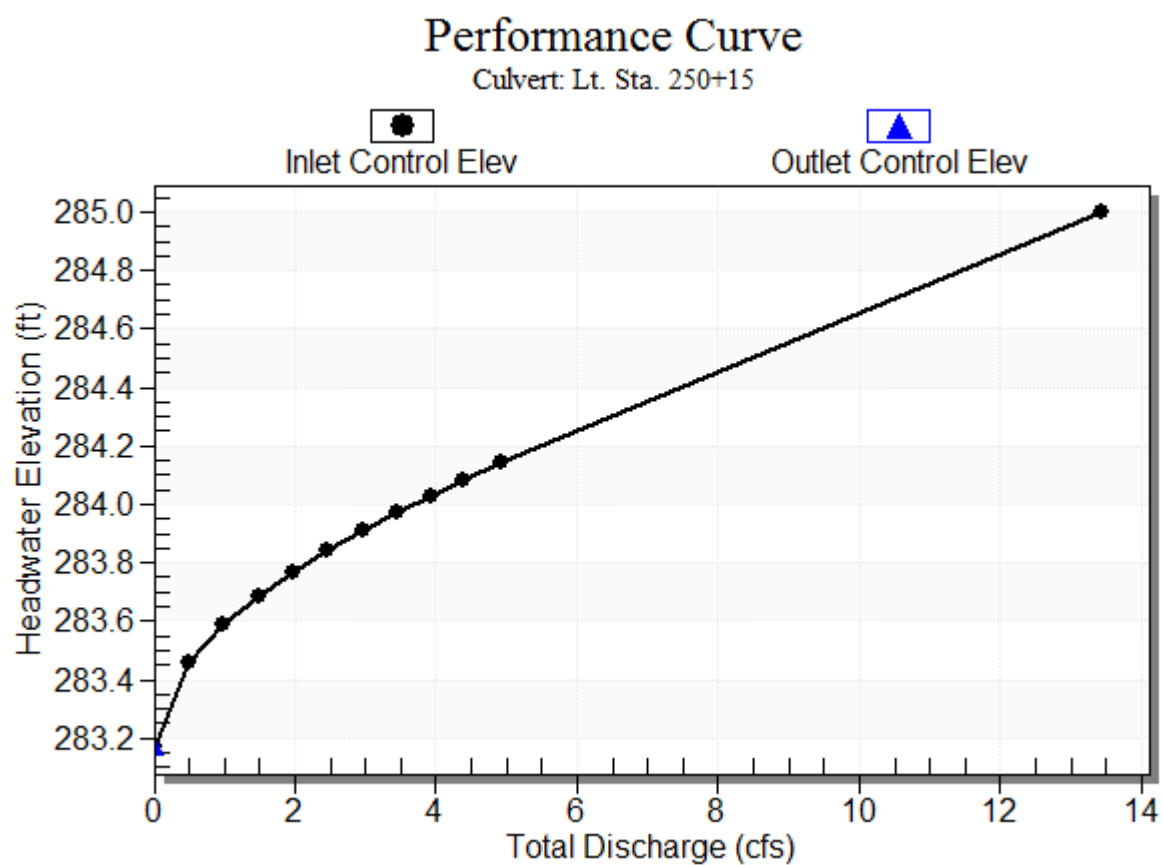
**Table 2 - Culvert Summary Table: Lt. Sta. 250+15**

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	283.17	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
0.49	0.49	283.46	0.289	0.0*	1-S2n	0.060	0.237	0.060	0.092	6.241	1.737
0.98	0.98	283.59	0.415	0.0*	1-S2n	0.121	0.337	0.121	0.139	7.796	2.256
1.48	1.48	283.68	0.513	0.0*	1-S2n	0.181	0.417	0.181	0.177	10.385	2.621
1.97	1.97	283.77	0.595	0.0*	1-S2n	0.200	0.481	0.200	0.211	13.993	2.909
2.46	2.46	283.84	0.671	0.0*	1-S2n	0.219	0.541	0.219	0.241	18.073	3.152
2.95	2.95	283.91	0.738	0.0*	1-S2n	0.238	0.596	0.238	0.269	13.494	3.361
3.44	3.44	283.97	0.801	0.0*	1-S2n	0.257	0.647	0.257	0.295	14.094	3.546
3.94	3.94	284.03	0.860	0.0*	1-S2n	0.276	0.691	0.276	0.319	14.580	3.715
4.38	4.38	284.08	0.912	0.0*	1-S2n	0.292	0.732	0.292	0.340	14.946	3.854
4.92	4.92	284.14	0.971	0.0*	1-S2n	0.313	0.776	0.313	0.365	15.320	4.009

\* Full Flow Headwater elevation is below inlet invert.

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Straight Culvert  
Inlet Elevation (invert): 283.17 ft,    Outlet Elevation (invert): 249.89 ft  
Culvert Length: 269.82 ft,    Culvert Slope: 0.1243  
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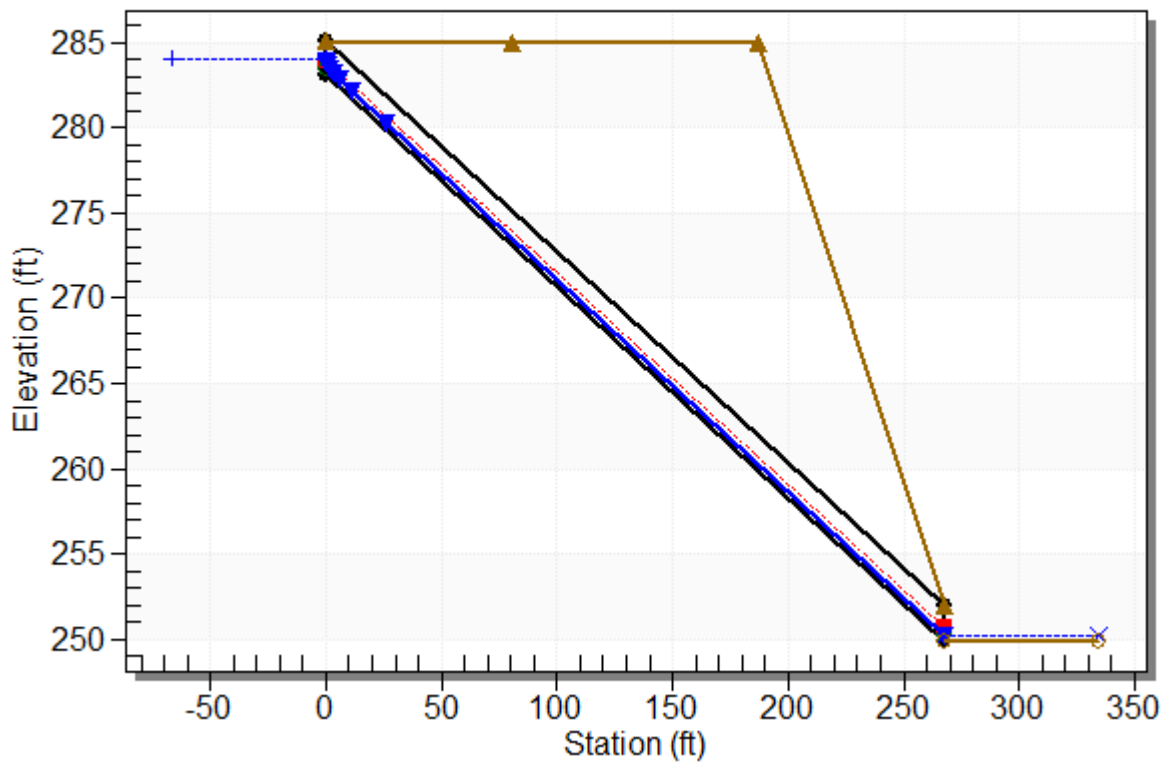
Culvert Performance Curve Plot: Lt. Sta. 250+15



## Water Surface Profile Plot for Culvert: Lt. Sta. 250+15

### Crossing - Crossing 18, Design Discharge - 4.4 cfs

Culvert - Lt. Sta. 250+15, Culvert Discharge - 4.4 cfs



## Site Data - Lt. Sta. 250+15

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 283.17 ft

Outlet Station: 267.76 ft

Outlet Elevation: 249.89 ft

Number of Barrels: 1

## Culvert Data Summary - Lt. Sta. 250+15

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Grooved End Projecting

Inlet Depression: NONE

**Table 3 - Downstream Channel Rating Curve (Crossing: Crossing 18)**

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	249.89	0.00	0.00	0.00	0.00
0.49	249.98	0.09	1.74	0.29	1.03
0.98	250.03	0.14	2.26	0.43	1.09
1.48	250.07	0.18	2.62	0.55	1.13
1.97	250.10	0.21	2.91	0.66	1.15
2.46	250.13	0.24	3.15	0.75	1.17
2.95	250.16	0.27	3.36	0.84	1.19
3.44	250.18	0.29	3.55	0.92	1.20
3.94	250.21	0.32	3.72	1.00	1.21
4.38	250.23	0.34	3.85	1.06	1.22
4.92	250.25	0.36	4.01	1.14	1.23

**Tailwater Channel Data - Crossing 18**

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 3.00 ft

Side Slope (H:V): 1.00 (1:1)

Channel Slope: 0.0500

Channel Manning's n: 0.0375

Channel Invert Elevation: 249.89 ft

**Roadway Data for Crossing: Crossing 18**

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 285.00 ft

Roadway Surface: Paved

Roadway Top Width: 106.00 ft